Novel Technique for Proximal Anchoring of Penile Prostheses in Female-to-male Transsexual

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OBJECTIVES To present our initial experience with a novel technique for fixation of an inflatable penile prosthesis in the female-to-male transsexual in 2 patients.

METHODS Proximal fixation of an inflatable penile prosthesis is challenging in the female-to-male transsexual because of the lack of normal corporal bodies. This technique uses a bone drill to create a fixation chamber in the symphysis pubis. A rear tip extender is then secured into bone, providing a stable fixation point for the proximal aspect of the penile cylinder.

RESULTS Two patients successfully underwent placement of a 2-cylinder inflatable penile prosthesis using this technique without any complications. At 8 and 13 months postoperatively, their Sexual Health Inventory for Men score was 23 and 25 of a possible 25 points, respectively.

CONCLUSIONS With modest follow-up, bone anchoring appears to provide improved support and better performance of the inflatable penile implant in the female-to-male transsexual patient. UROLOGY 74: 419–421, 2009. © 2009 Elsevier Inc.

The prevalence of gender identity disorder has been estimated at 1:3000 to 1:13 000, depending on the survey method, diagnostic criteria, and country.[1,2] This term has replaced "transsexualism" in the 4th edition of the "Diagnostic and Statistical Manual of Mental Disorders."[3] If a patient has lived for 12 months as the desired sex and has received hormonal therapy for ≥6 months, surgical sex assignment might be indicated.[4] Readiness is then based on the patient's progress in consolidating their identity, as well as their improved mental health from better work, family, and interpersonal experiences.[5]

Although no consensus operative standard exists for female-to-male transsexual (FM-TS) phalloplasty, many surgeons have used the free radial forearm flap phalloplasty introduced in 1984 by Chang and Wang[6] and Kao et al.[7,8] With the advent of the sensate neophallus, patients have achieved greater sexual performance. However, physiologic tumescence in the neophallus is not possible. A variety of methods have been proposed to achieve rigidity, including acrylic splints, bone grafts, malleable implants, and inflatable implants.[9,10] Complications have included migration, extrusion, infection, and flaccidity. Hoebeke et al.[11] published their results of 35 FM-TS phalloplasties with hydraulic prosthetic device placement. Of the 35 patients, 29 were sexually active, with partner satisfaction.[11]

In the absence of true corporal bodies and tunica, the placement of the penile prosthesis in the FM-TS patient requires fixation of the proximal extent of the cylinders to the inferior pubic ramus.[12] However, proximal migration can occur, and patients might observe a lack of rigidity. We describe a novel technique for the placement of an inflatable prosthesis in a FM-TS patient through proximal anchoring into the pubic symphysis.

MATERIAL AND METHODS

Two patients with gender identity disorder underwent sex reassignment surgery, including construction of a neophallus using a free radial forearm flap. Both patients achieved sensation and subsequently desired penile prosthesis placement to allow for sexual relations.

We present a single case, representative of the 2 we have performed. The patient had undergone interval placement of a scrotal expander for future housing of the pump. The skin incision was made longitudinally along the previous phalloplasty incision. At phalloplasty, a left saphenous vein arteriovenous loop had been created, with a proximal anastomosis to the superficial femoral artery. This loop was then tunneled from a groin incision into the pelvic incision, divided at its midpoint, and anastomosed on its venous end to the cephalic vein and on its arterial end to the radial artery. Avoiding these anastomoses is critical, and intraoperative ultrasonography might be useful in identifying the arterial inflow.

During placement of the penile prosthesis, the penile length was 22 cm from the pubic bone to the glans and a 21-cm

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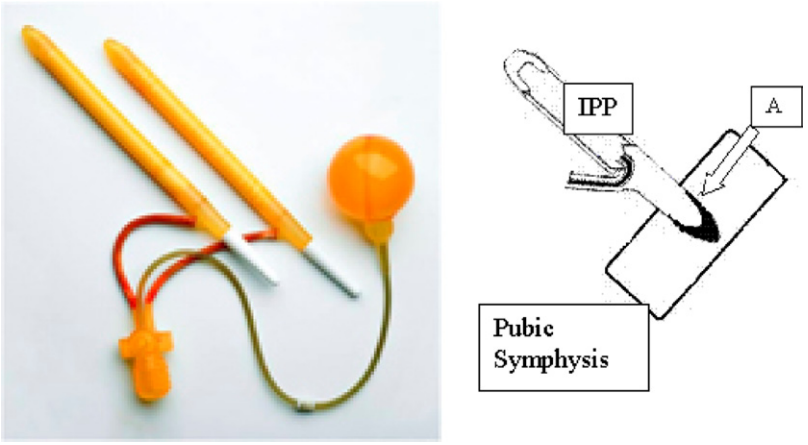

Figure 1. AMS 700 penile prosthesis. Rear tip extenders depicted in white (above left), and black (above right). They were placed on proximal rear tips to achieve additional length. Courtesy of American Medical Systems, Incorporated (Minnetonka, MN).

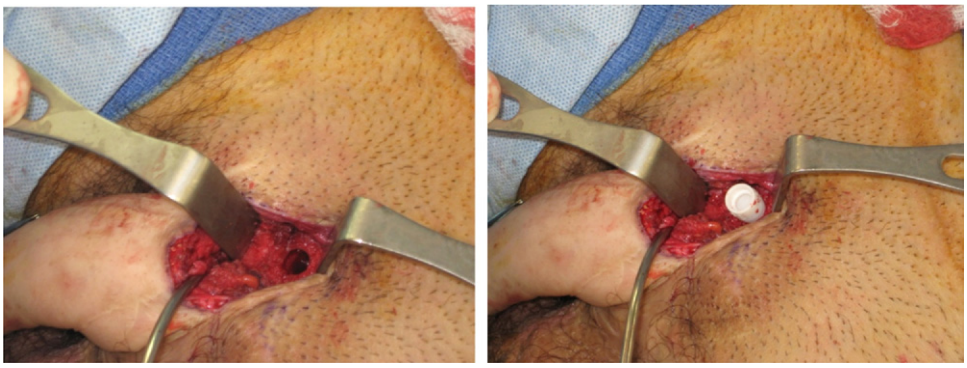

Figure 2. (Left) Corticotomy, 1 cm deep by 1 cm wide, in anterior pubic ramus, with neophallus on left side of photograph. **(Right)** Right rear tip extender (white), anchored into pubis by 2 flanking bone anchors (not shown).

cylinder length was selected (Fig. 1). On the anterior aspect of the pubic ramus, a 1 cm deep by 1 cm diameter corticotomy was created using an electric drill (Fig. 2). The corticotomy was made as an inverted conical shape, geometrically complimentary to the proximal rear tip extender. On either side of the corticotomy, a Depuy Mitek Mini Quickanchor Plus bone anchor was drilled and impacted. The bone anchor was preloaded with 2-0 Ethibond suture, double-armed with V-5 needles. The sutures were guided perpendicularly through both the rear tip extender and the cylinder at region as depicted in Figure 1, and tied. This allowed for the rear tip to be seated into the bony conical defect without compromising the hydraulic mechanics of the prosthesis, depicted exiting the inflatable penile prosthesis at approximately the 9-o'clock position (Fig. 1).

The patient then underwent placement of an unmodified, double-cylinder AMS-700 (American Medical Systems, Minnetonka, MN). A counter-incision was made in the right lower quadrant and carried down into a subrectus pouch for placement of a 65-mL reservoir. The pump was placed into the right scrotal pouch previously occupied by the tissue expander. Trial activation revealed a fully erect neophallus with no apparent supersonic transporter deformity (Fig. 3).

Figure 3. Postoperative trial activation of 2 cylinder inflatable penile prosthesis with reservoir incision (upper right), and cylinder incision (base of neophallus).

RESULTS

We used the proximal bone-anchoring technique in 2 FM-TS patients. Our first patient underwent single-cylinder prosthesis placement with bony anchoring but complained of an inadequate girth. This patient then underwent placement of a 2-cylinder prosthesis using this technique and was able to achieve sexual intercourse without difficulty, as was our second patient, who underwent double-cylinder placement initially.

The patients have been followed up postoperatively for 8 and 13 months, by clinic visits, telephone calls, and electronic mail, with a Sexual Health Inventory for Men score of 23 and 25, respectively.

COMMENT

Proximal migration and distal erosion of penile prostheses remain as the two primary challenges facing the reconstructive surgeon. Before the initiation of the present technique, inflatable penile prosthesis placement in the FM-TS patient with standard anchoring techniques have led to suboptimal outcomes. Specifically, perineal tenderness has developed superficial to the proximal portion of the inflatable cylinder. For such patients, the cylinder was tethered to the periosteum at the inferior portion of the pubic ramus. It is believed that with repeated impact, the cylinder became displaced caudally and thus palpable. With 8 and 13 months of follow-up, neither of our patients, who underwent pubic bone anchoring, has been hampered by proximal migration of their prosthesis. With longer follow-up and larger patient accrual, a more adequate appraisal can be made.

Erosion is a second concern, historically discouraging many surgeons from implantation.[13] Of their initial 12 patients with a neophallus who underwent prosthesis placement, Bettocchi et al.[14] removed 6 prostheses secondary to erosion. Currently, their group uses a Dacron sleeve.[14] Others have advocated a "neotunica" fashioned from vascular stretch Gortex to decrease the incidence of erosion.[9,15] Monstrey et al.[16] have implanted 25 prostheses in FM-TS patients; 1 required removal secondary to erosion. By deferring placement of the inflatable prosthesis until the return of sensation, we have had 0 cases of prosthesis erosion in our FM-TS patients.[12]

A final concern involves intraoperative adjustment to the prosthesis size. Because the defect created in the proximal cylinder can be rethreaded without compromising the mechanics of the prosthesis, one can simply resuture a larger rear tip extender if extra length is needed. We have not needed to add additional rear tip extenders in this situation.

CONCLUSIONS

Proximal fixation of the penile prosthesis in the FM-TS patient has been a consistent challenge for the reconstructive surgeon. The use of proximal bone anchoring to the symphysis pubis resulted in satisfactory sexual performance and improved fixation in the FM-TS patient.

References

1. Tsoi WF. The prevalence of transsexualism in Singapore. *Acta Psychiatr Scand*. 1988;78:501-504.
2. De Cuypere G, Van Hemelrijck M, Michel A, et al. Prevalence and demography of transsexualism in Belgium. *Eur Psychiatry*. 2007; 22:137-141.
3. American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders*, 4th ed. Washington, DC: American Psychiatric Publishing; 1994.
4. Sohn M, Bosinski H. Gender identity disorders: diagnostic and surgical aspects. *J Sex Med*. 2007;4:1193-1208.
5. Meyer W III, Bockting W, Cohen-Kettenis P, et al. The standards of care for gender identity disorders, 6th version. *IJT*. 2001;5:1-31.
6. Chang TS, Whang H. Forearm flap in one-stage reconstruction of the penis. *Plast Reconstr Surg*. 1984;74:251-258.
7. Kao C, Kao J, Ho C. One-stage reconstruction of the penis with free skin flap: report of three cases. *J Reconstr Microsurg*. 1984;1: 149-153.
8. Hage JJ, Bloehm JJ, Suliman HM. Review of the literature on techniques for phalloplasty with emphasis on the applicability in female-to-male transsexuals. *J Urol*. 1993;150:1093-1098.
9. Alter GJ, Gilbert DA, Schlossberg SM, et al. Prosthetic implantation after phallic construction. *Microsurgery*. 1995;16:322-324.
10. Yang M, Zhao M, Li S, et al. Penile reconstruction by the free scapular flap and malleable panis prosthesis. *Ann Plast Surg*. 2007; 59:95-101.
11. Hoebeke P, de Cuypere P, Ceulmans P, et al. Obtaining rigidity in total phalloplasty: experience with 35 patients. *J Urol*. 2003;169: 221-223.
12. Levine LA, Zachary LS, Gottlieb LJ. Prosthesis placement after total phallic reconstruction. *J Urol*. 1993;149:593-598.
13. Fang R, Lin J, Ma S. Phalloplasty for female transsexuals with sensate free forearm flap. *Microsurgery*. 1994;15:349-352.
14. Bettocchi C, Ralph DJ, Pryor JP. Pedicled pubic phalloplasty in females with gender dysphoria. *BJU Int*. 2005;95:120-124.
15. Jordan GH, Alter GJ, Gilbert DA, et al. Penile prosthesis implantation in total phalloplasty. *J Urol*. 1994;152:410-414.
16. Monstrey S, Hoebeke P, Dhont M, et al. Radial forearm phalloplasty: a review of 81 cases. *Eur J Plast Surg*. 2005;28:206-212.